FIG. 2

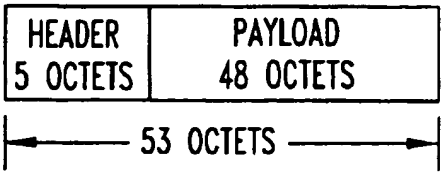


FIG. 3

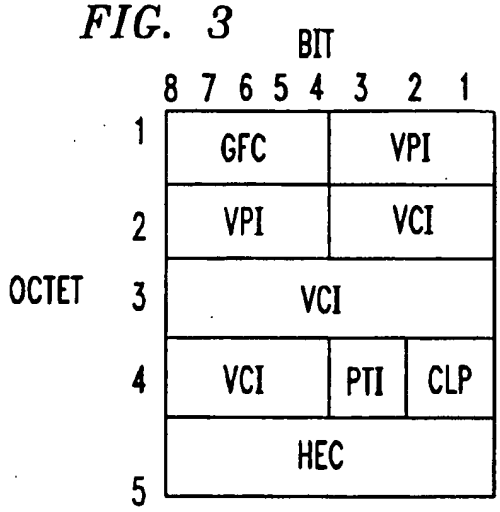
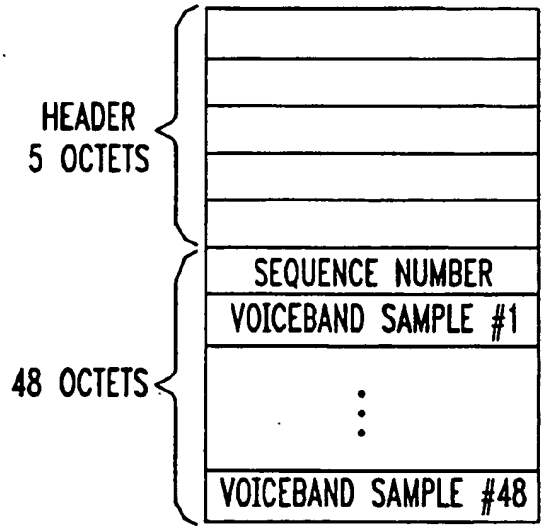


FIG. 4



US-PAT-NO: 5459722

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TITLE: Asynchronous transfer mode (ATM) transport of voice-band signals

DATE-ISSUED: October 17, 1995

INVENTOR-INFORMATION:

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US-CL-CURRENT: 370/395.51, 370/395.61 , 370/410 , 370/474

ABSTRACT:

A plurality of ATM networks may be interconnected to allow communication of voice-band signals between them by using one or more PSTNs and a novel interface that converts ATM formatted data packets to a format usable by digital multiplication equipment (DCME). Such an interface thus allows the DCME to advantageously function as a gateway between the ATM network and PSTN
by providing for optimum bandwidth usage between the networks. In an illustrative example of the invention, a DCME available from AT&T as the Integrated Access and Cross Connect System ("IACS"), is provided with an ATM-to-DCME interface that converts ATM formatted packets to a regular channelized bitstream usable as an input by the IACS. The interface and the IACS are positioned on both ends of a PSTN to allow for connectivity between the PSTN and a plurality of ATM networks, as well as the required optimization of bandwidth usage. In another illustrative example of the invention, the functionality of the interface is built in to the IACS to convert ATM formatted packets directly into efficient wideband formatted packets for transmission over the PSTN.

16 Claims, 9 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

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Application Filing Date - AD (1):
19940630

Detailed Description Text - DETX (20):
Returning back to FIG. 1, in operation, local ATM 70 transmits a voice-band signal in the form of ATM-formatted packets to ATM-to-DCME interface 40 which depacketizes and converts the signal into a regular channelized bitstream in a format conforming to CCITT recommendation G.703/G.704. The conversion of the
format from ATM to G.703/G.704 may be accomplished using a conventional method.
However, ATM-to-DCME interface 40 must perform other tasks, in accordance with
the principles of the invention, in order to fully implement the gateway function between local ATM network 70 and PSTN 10. First, ATM-to-DCME interface 40 checks the cyclic redundancy check (CRC) bits in each,packet in the incoming signal. If a CRC check of the ATM packet indicates that the ATM packet is valid, then a validity indication signal is generated and ATM-to-DCME interface 40 extracts the payload from the ATM packet and performs the conversion to G.703/G.704 format in response to the validity indication signal. If the check indicates that the ATM packet is invalid then ATM-to-DCME interface 40 will either drop the packet, or will transmit silence or idle codes to DCME 30. Next, the 3-bit **sequence number** subfield and the 1-bit convergence sublayer indicator subfield in the **sequence number** field in the **payload** of the incoming **ATM** packet, are transmitted by **ATM**-to-DCME interface 40
to DCME 30 in any appropriate format for use in a signaling frame, for example, a signaling frame as defined by CCITT recommendation G.764. To accomplish this, one channel between ATM-to-DCME interface 40 and DCME 30 must be reserved
for transmission of this signaling frame. An example of a signaling frame conforming to CCITT G.764 is shown in FIG. 7.

Detailed Description Text - DETX (28):
At the terminating endpoint, DCME 220 selects an appropriate **sequence number**

to put in the **ATM payload,** by using either information from a signaling frame, or by increasing the **sequence number** automatically. 4-bit error detection and correction codes are then regenerated to reform the sequence number field with its three subfields. The ATM formatted packets are transmitted by DCME 230 to local ATM network 260. Of course, those skilled in the art will appreciate that DCME is similar in form and operation to DCME 230, and thus details of DCME 220 need not be shown or described further.